

WHAT IS CLAIMED

Sub
A1
1. An isolated nucleic acid molecule comprising a nucleotide sequence selected from:

(a) the nucleotide sequence as set forth in SEQ
5 ID NOs: 1, 3, 5 or 7;

(b) the nucleotide sequence as set forth in SEQ
ID NOs: 9, 11 or 13;

(c) a nucleotide sequence encoding the
polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

10 (d) a nucleotide sequence encoding the
polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

(e) a nucleotide sequence which hybridizes under
moderately or highly stringent conditions to the
complement of (a) or (b), wherein the encoded
15 polypeptide has an activity of the mature form of a
polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

(f) a nucleotide sequence which hybridizes under
moderately or highly stringent conditions to the
complement of (a) or (b), wherein the encoded
20 polypeptide has an activity of the mature form of a
polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;
and

(g) a nucleotide sequence complementary to any of
(a)-(f).
25

2. An isolated nucleic acid molecule comprising a
nucleotide sequence selected from:

(a) a nucleotide sequence encoding a polypeptide
that is at least about 70, 75, 80, 85, 90, 95, 96, 97,
30 98 or 99 percent identical to the polypeptide as set

A-692

forth in SEQ ID NOS: 2, 4, 6 or 8, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;

5 (b) a nucleotide sequence encoding a polypeptide that is at least about 70, 75, 80, 85, 90, 95, 96, 97, 98 or 99 percent identical to the polypeptide as set forth in SEQ ID NOS: 10, 12 or 14, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14;

10 (c) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence as set forth in SEQ ID NOS: 1, 3, 5 or 7, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;

15 (d) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence as set forth in SEQ ID NOS: 9, 11 or 13, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14;

20 (e) a nucleotide sequence of SEQ ID NOS: 1, 3, 5 or 7, or (a) or (b), above, encoding a polypeptide fragment of at least about 25 amino acid residues, 25 wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;

30 (f) a nucleotide sequence of SEQ ID NOS: 9, 11 or 13, or (a) or (b), above, encoding a polypeptide fragment of at least about 25 amino acid residues, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 10,

A-692

12 or 14;

Sub
#1

5 g) a nucleotide sequence encoding a polypeptide that has a substitution and/or deletion of 1 to 100 amino acid residues as set forth in any of SEQ ID NOs: 1, 3, 5 or 7, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

10 h) a nucleotide sequence encoding a polypeptide that has a substitution and/or deletion of 1 to 100 amino acid residues as set forth in any of SEQ ID NOs: 9, 11 or 13, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

15 (i) a nucleotide sequence of SEQ ID NOs: 1, 3, 5 or 7, or (a), (c), (e) or (g), above, comprising a fragment of at least about 16 nucleotides;

(j) a nucleotide sequence of SEQ ID NOs: 9, 11 or 13, or (b), (d), (f) or (h), above, comprising a fragment of at least about 16 nucleotides;

20 (k) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (a), (c), (e), (g) or (i) , above,, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID
25 NOs: 2, 4, 6 or 8;

30 (l) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (b), (d), (f), (h) or (j), above, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14; and

A-692

Sub
A'
(m) a nucleotide sequence complementary to any of (a)-(1).

3. An isolated nucleic acid molecule comprising a
5 nucleotide sequence selected from:

(a) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8 with at least one conservative amino acid substitution, wherein the polypeptide has an activity of the mature form of a
10 polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

(b) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14 with at least one conservative amino acid substitution, wherein the polypeptide has an activity of the mature form of a
15 polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

(c) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8 with at least one amino acid insertion, wherein the polypeptide has an activity of the mature form of a polypeptide as set
20 forth in SEQ ID NOs: 2, 4, 6 or 8;

(d) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14 with at least one amino acid insertion, wherein the polypeptide has an activity of the mature form of a polypeptide as set
25 forth in SEQ ID NOs: 10, 12 or 14;

(e) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8 with at least one amino acid deletion, wherein the polypeptide has an activity of the mature form of a polypeptide as set
30 forth in SEQ ID NOs: 2, 4, 6 or 8;

(f) a nucleotide sequence encoding a polypeptide

A-692

as set forth in SEQ ID NOS: 10, 12 or 14 with at least one amino acid deletion, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14;

5 (g) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8 which has a C- and/or N- terminal truncation, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;

10 (h) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14 which has a C- and/or N- terminal truncation, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14;

15 (i) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8 with at least one modification selected from at least one amino acid substitution, amino acid insertion, amino acid deletion, C-terminal truncation, and N-terminal
20 truncation, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;

(j) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NOS: 10, 12 or 14 with at least
25 one modification selected from at least one amino acid substitution, amino acid insertion, amino acid deletion, C-terminal truncation, and N-terminal truncation, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID
30 NOS: 10, 12 or 14;

(k) a nucleotide sequence of (a)-(j) comprising a fragment of at least about 16 nucleotides;

Sub
A1

(l) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (a), (c), (e), (g), (i) or (k), wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

(m) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (b), (d), (f), (h), (j) or (k), wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14; and

(n) a nucleotide sequence complementary to any of (a) - (m).

4. A vector comprising the nucleic acid molecule of Claims 1, 2, or 3.

5. A host cell comprising the vector of Claim 4.

6. The host cell of Claim 5 that is a eukaryotic cell.

7. The host cell of Claim 5 that is a prokaryotic cell.

8. A process of producing a B7-like polypeptide comprising culturing the host cell of Claim 5 under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.

9. A polypeptide produced by the process of Claim

SUB B
5 10. The process of Claim 8, wherein the nucleic acid molecule comprises promoter DNA other than the promoter DNA for the native B7-like polypeptide operatively linked to the DNA encoding the B7-like polypeptide.

SUB A2
10 11. The isolated nucleic acid molecule according to Claim 2 wherein the percent identity is determined using a computer program selected from GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.

15 12. A process for determining whether a compound inhibits B7-like polypeptide activity or production comprising exposing a cell according to Claims 5, 6, or 7 to the compound, and measuring B7-like polypeptide activity or production in said cell.

20 13. An isolated polypeptide comprising an amino acid sequence set forth in SEQ ID NOs: 2, 4, 6, or 8.

14. An isolated polypeptide comprising the amino acid sequence selected from:

25 a) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 2, and optionally further comprising an amino-terminal methionine;

(b) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 4, and optionally
30 further comprising an amino-terminal methionine;

A-692

(c) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 6, and optionally further comprising an amino-terminal methionine;

(d) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 8, and optionally further comprising an amino-terminal methionine;

(e) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 10, and optionally further comprising an amino-terminal methionine;

(f) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 12, and optionally further comprising an amino-terminal methionine;

(g) an amino acid sequence comprising the mature form of the polypeptide of SEQ ID NO: 14, and optionally further comprising an amino-terminal methionine;

(h) an amino acid sequence for an ortholog of any one of SEQ ID NOs: 2, 4, 6 or 8, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

(i) an amino acid sequence for an ortholog of any one of SEQ ID NOs: 10, 12 or 14, wherein the encoded polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

(j) an amino acid sequence that is at least about 70, 80, 85, 90, 95, 96, 97, 98 or 99 percent identical to the amino acid sequence of SEQ ID NOs: 2, 4, 6 or 8, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4,

A-692

6 or 8;

(k) an amino acid sequence that is at least about 70, 80, 85, 90, 95, 96, 97, 98 or 99 percent identical to the amino acid sequence of SEQ ID NOs: 10, 12 or 14, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

(l) a fragment of the amino acid sequence as set forth in SEQ ID NOs: 2, 4, 6 or 8 comprising at least about 25 amino acid residues, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8;

(m) a fragment of the amino acid sequence as set forth in SEQ ID NOs: 10, 12 or 14 comprising at least about 25 amino acid residues, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14;

(n) an amino acid sequence for an allelic variant or splice variant of either the amino acid sequence as set forth in SEQ ID NOs: 2, 4, 6 or 8, or at least one of (a), (c), (e), (f), (h), (i), (k) or (l), above, wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 2, 4, 6 or 8; and

(o) an amino acid sequence for an allelic variant or splice variant of either the amino acid sequence as set forth in SEQ ID NOs: 10, 12 or 14, or at least one of (b), (d), (f), (h), (j), (l) or (m) wherein the polypeptide has an activity of the mature form of a polypeptide as set forth in SEQ ID NOs: 10, 12 or 14.

15. An isolated polypeptide comprising the amino

A-692

acid sequence selected from:

(a) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6 or 8 with at least one conservative amino
acid substitution, wherein the polypeptide has an
5 activity of the mature form of a polypeptide as set
forth in SEQ ID NOS: 2, 4, 6 or 8;

(b) the amino acid sequence as set forth in SEQ ID
NOS: 10, 12 or 14 with at least one conservative amino
acid substitution, wherein the polypeptide has an
10 activity of the mature form of a polypeptide as set
forth in SEQ ID NOS: 10, 12 or 14;

(c) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6 or 8 with at least one amino acid
insertion, wherein the polypeptide has an activity of
15 the mature form of a polypeptide as set forth in SEQ ID
NOS: 2, 4, 6 or 8;

(d) the amino acid sequence as set forth in SEQ ID
NOS: 10, 12 or 14 with at least one amino acid
insertion, wherein the polypeptide has an activity of
20 the mature form of a polypeptide as set forth in SEQ ID
NOS: 10, 12 or 14;

(e) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6 or 8 with at least one amino acid
deletion, wherein the polypeptide has an activity of
25 the mature form of a polypeptide as set forth in SEQ ID
NOS: 2, 4, 6 or 8;

(f) the amino acid sequence as set forth in SEQ ID
NOS: 10, 12 or 14 with at least one amino acid
deletion, wherein the polypeptide has an activity of
30 the mature form of a polypeptide as set forth in SEQ ID
NOS: 10, 12 or 14;

A-692

(g) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6 or 8 which has a C- and/or N-terminal
truncation, wherein the polypeptide has an activity of
the mature form of a polypeptide as set forth in SEQ ID
5 NOS: 2, 4, 6 or 8;

(h) the amino acid sequence as set forth in SEQ ID
NOS: 10, 12 or 14 which has a C- and/or N-terminal
truncation, wherein the polypeptide has an activity of
the mature form of a polypeptide as set forth in SEQ ID
10 NOS: 10, 12 or 14;

(i) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6 or 8, with at least one modification
selected from at least one amino acid substitution,
amino acid insertion, amino acid deletion, C-terminal
15 truncation, and N-terminal truncation, wherein the
polypeptide has an activity of the mature form of a
polypeptide as set forth in SEQ ID NOS: 2, 4, 6 or 8;
and

(j) the amino acid sequence as set forth in SEQ ID
20 NOS: 10, 12 or 14, with at least one modification
selected from at least one amino acid substitution,
amino acid insertion, amino acid deletion, C-terminal
truncation, and N-terminal truncation, wherein the
polypeptide has an activity of the mature form of a
25 polypeptide as set forth in SEQ ID NOS: 10, 12 or 14.

16. An isolated polypeptide encoded by a nucleic
acid molecule of Claims 1, 2, or 3.

30 17. The isolated polypeptide according to Claim 14
wherein the percent identity is determined using a
computer program selected from GAP, BLASTP, BLASTN,

A-692

FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.

18. An antibody produced by immunizing an animal
5 with a peptide comprising an amino acid sequence of SEQ
ID NOS: 2, 4, 6, 8, 10, 12 or 14.

19. An antibody or fragment thereof that
specifically binds at least one polypeptide of Claims
10 13, 14, or 15.

20. The antibody of Claim 19 that is a monoclonal
antibody.

21. A hybridoma that produces a monoclonal
15 antibody that binds to at least one peptide comprising
an amino acid sequence selected from SEQ ID NOS: 2, 4,
6, 8, 10, 12 or 14.

22. A method of detecting or quantitating the
20 amount of B7-like polypeptide using the anti-B7-like
antibody or fragment of Claims 18, 19, or 20.

23. A selective binding agent or fragment thereof
25 that specifically binds at least one polypeptide
comprising an amino acid sequence selected from:

- a) the amino acid sequence as set forth in SEQ ID
NOS: 2, 4, 6, 8, 10, 12 or 14; and
- b) a fragment of the amino acid sequence set forth
30 in at least one of SEQ ID NOS: 2, 4, 6, 8, 10, 12
or 14; and
- c) a naturally occurring variant of (a) or (b).

A-692

24. The selective binding agent of Claim 23 that is an antibody or fragment thereof.

25. The selective binding agent of Claim 23 that is a humanized antibody.

26. The selective binding agent of Claim 23 that is a human antibody or fragment thereof.

27. The selective binding agent of Claim 23 that is a polyclonal antibody or fragment thereof.

28. The selective binding agent Claim 23 that is a monoclonal antibody or fragment thereof.

29. The selective binding agent of Claim 23 that is a chimeric antibody or fragment thereof.

30. The selective binding agent of Claim 23 that is a CDR-grafted antibody or fragment thereof.

31. The selective binding agent of Claim 23 that is an antiidiotypic antibody or fragment thereof.

32. The selective binding agent of Claim 23 which is a variable region fragment.

33. The variable region fragment of Claim 32 which is a Fab or a Fab' fragment.

34. A selective binding agent or fragment thereof comprising at least one complementarity determining region with specificity for at least one polypeptide

A-692

comprising an amino acid sequence selected from SEQ ID
NOs: 2, 4, 6, 8, 10, 12 or 14.

35. The selective binding agent of Claim 23 which
5 is bound to a detectable label.

36. The selective binding agent of Claim 23 which
antagonizes B7-like polypeptide biological activity.

10 37. A method for treating, preventing, or
ameliorating a disease, condition, or disorder
comprising administering to a patient an effective
amount of a selective binding agent according to Claim
23.

15 38. A selective binding agent produced by
immunizing an animal with a polypeptide comprising an
amino acid sequence selected SEQ ID NOs: 2, 4, 6, 8,
10, 12 or 14.

20 39. A hybridoma that produces a selective binding
agent capable of binding a polypeptide according to
Claims 1, 2, or 3.

25 40. A composition comprising the polypeptide of
Claims 13, 14, or 15 and a pharmaceutically acceptable
formulation agent.

30 41. The composition of Claim 40 wherein the
pharmaceutically acceptable formulation agent is a
carrier, adjuvant, solubilizer, stabilizer, or anti-
oxidant.

A-692

42. The composition of Claim 40 wherein the polypeptide comprises the mature form of an amino acid sequence as set forth in SEQ ID NOs: 2, 4, 6, 8, 10, 12 or 14.

5

43. A polypeptide comprising a derivative of the polypeptide of Claims 13, 14, or 15.

44. The polypeptide of Claim 43 which is covalently modified with a water-soluble polymer.

45. The polypeptide of Claim 44 wherein the water-soluble polymer is selected from polyethylene glycol, monomethoxy-polyethylene glycol, dextran, cellulose, poly-(N-vinyl pyrrolidone), polyethylene glycol, propylene glycol homopolymers, polypropylene oxide/ethylene oxide co-polymers, polyoxyethylated polyols, and polyvinyl alcohol.

46. A composition comprising a nucleic acid molecule of Claims 1, 2, or 3 and a pharmaceutically acceptable formulation agent.

47. A composition of Claim 46 wherein said nucleic acid molecule is contained in a viral vector.

48. A viral vector comprising a nucleic acid molecule of Claims 1, 2, or 3.

49. A fusion polypeptide comprising the polypeptide of Claims 13, 14, or 15 fused to a heterologous amino acid sequence.

50. The fusion polypeptide of Claim 49 wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

5 51. A method for treating, preventing or ameliorating a medical condition comprising administering to a patient the polypeptide of Claims 13, 14, or 15 or the polypeptide encoded by the nucleic acid of Claims 1, 2, or 3.

10

52. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

15 (a) determining the presence or amount of expression of the polypeptide of Claims 13, 14, or 15 or the polypeptide encoded by the nucleic acid molecule of Claims 1, 2, or 3 in a sample; and

20 (b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

53. A device, comprising:

(a) a membrane suitable for implantation; and

25 (b) cells encapsulated within said membrane, wherein said cells secrete a protein of Claims 13, 14, or 15, and wherein said membrane is permeable to said protein and impermeable to materials detrimental to said cells.

30 54. A method of identifying a compound which binds to a polypeptide comprising:

A-692

(a) contacting the polypeptide of Claims 13, 14, or 15 with a compound; and

(b) determining the extent of binding of the polypeptide to the compound.

55. A method of modulating levels of a polypeptide in an animal comprising administering to the animal the nucleic acid molecule of Claims 1, 2, or 3.

10 56. A transgenic non-human mammal comprising the nucleic acid molecule of Claims 1, 2, or 3.